VERIFICATION OF TRANSLATION

I, Yukiko Nakayama, translator of Fushimi-ku, Kyoto, Japan, hereby declare that I am conversant with the English and Japanese languages and am a competent translator thereof. I further declare that to the best of my knowledge and belief the following is a true and correct translation made by me of Japanese Patent Application 2002-303507 filed on October 17, 2002.

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Yukiko Nakayama

Yukiko Nakayama

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[Inventor]

[Address or Residence] c/o MATSUSHITA ELECTRIC INDUSTRIAL Co., Ltd.
1006, Oaza Kadoma, Kadoma-shi, Osaka-fu, Japan

[Name] Yasuo Ishiguro

[Inventor]

[Address or Residence] c/o MATSUSHITA ELECTRIC INDUSTRIAL Co., Ltd.
1006, Oaza Kadoma, Kadoma-shi, Osaka-fu, Japan

[Name] Ryuichi Arikado

[Inventor]

[Address or Residence] c/o MATSUSHITA SYSTEMS SOFTWARE Co., Ltd.
1-3-7, Shiromi, Chuo-ku, Osaka-shi, Osaka-fu, Japan

[Name] Shu Saito

[Inventor]

[Address or Residence] c/o MATSUSHITA SYSTEMS SOFTWARE

Co., Ltd.
1-3-7, Shiromi, Chuo-ku,
Osaka-shi, Osaka-fu, Japan

[Name] Kouhei Aoki

[Applicant]

[Identification Number] 000005821

[Name] MATSUSHITA ELECTRIC INDUSTRIAL Co., Ltd.

[Patent Attorney]

[Identification Number] 100090446

[Name] Shiro Nakajima

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Title of the Invention

Data Searching Apparatus

Range of the Patent Claims

Claim 1

A data searching apparatus that searches a database of data files for a desired data file, based on a search condition set by a user, each data file including a plurality of search keys characterizing the data file, comprising:

a receiving unit operable to receive a search condition from the user;

a searching unit operable to search the database for at least one data file that satisfies the search condition received by the receiving unit; and

an extracting unit operable to extract a plurality of search keys, from the data file that is a search result by the searching unit,

wherein the searching unit further searches the database for at least one data file that includes at least one of the search keys extracted by the extracting unit.

Claim 2

The data searching apparatus of Claim 1, wherein

the extracting unit includes:

a data-file-list displaying unit operable to display a list of data files that are search results by the searching unit;

a file-selection receiving unit operable to receive, from the user, selection of a data file from the list displayed by the data-file-list displaying unit; and

a selective extracting unit operable to extract search keys, from the data file selected in the file-selection receiving unit.

Claim 3

The data searching apparatus of Claim 2, wherein

the search keys are categorized in a plurality of fields,

the selective extracting unit extracts search keys for each of the plurality of fields, from the data file selected in the file-selection receiving unit, and

the searching unit includes:

a search-key-list displaying unit operable to display a list of the search keys extracted for each of the plurality of fields by the extracting unit;

a key-selection receiving unit operable to receive, from the user, selection of at least one search key from the list displayed by the search-key-list displaying unit; and

a selective searching unit operable to search the

database for at least one data file that includes the search key selected in the key-selection receiving unit.

Claim 4

The data searching apparatus of Claim 1 that searches for a patent data file, wherein

one type of the search keys is a keyword,

the searching unit searches the database for at least one patent data file that includes a keyword,

the extracting unit extracts a plurality of frequently-used keywords, from the patent data file that is a search result by the searching unit, and

the searching unit further searches the database for at least one patent data file that includes at least one of the frequently-used keywords extracted by the extracting unit.

Claim 5

The data searching apparatus of Claim 1 that searches for a patent data file, wherein

one type of the search keys is an IPC symbol, where "IPC" represents the International Patent Classification,

the searching unit searches the database for at least one patent data file that includes an IPC symbol,

the extracting unit extracts a plurality of IPC symbols, from the patent data file that is a search result by the

searching unit, and

the searching unit further searches the database for at least one patent data file that includes at least one of the IPC symbols extracted by the extracting unit.

Claim 6

The data searching apparatus of Claim 1 that searches for a patent data file, wherein

one type of the search keys is an F-term, where "F-term" represents the File Forming Term,

the searching unit searches the database for at least one patent data file that includes an F-term,

the extracting unit extracts a plurality of F-terms, from the patent data file that is a search result by the searching unit, and

the searching unit further searches the database for at least one patent data file that includes at least one of the F-terms extracted by the extracting unit.

Claim 7

The data searching apparatus of Claim 1 that searches for a patent data file, wherein

three types of the search keys are an IPC symbol, an F-term, and a keyword, where "IPC" represents the International Patent Classification, and "F-term" represents

the File Forming Term,

the receiving unit receives, as search keys, at least one of IPC symbols, F-terms, and keywords,

the searching unit searches the database for at least one patent data file that includes at least one of the search keys received by the receiving unit,

the extracting unit extracts, as search keys, IPC symbols, F-terms, and frequently-used keywords, from the patent data file that is a search result by the searching unit, and

the searching unit further searches the database for at least one patent data file that includes at least one of the search keys extracted by the extracting unit.

Claim 8

A data searching method for searching a database of data files for a desired data file, based on a search condition set by a user, each data file including a plurality of search keys characterizing the data file, the method comprising:

a receiving step of receiving a search condition from the user;

a searching step of searching the database for at least one data file that satisfies the search condition received in the receiving step; and

an extracting step of extracting a plurality of search keys, from the data file that is a search result in the searching

step,

wherein in the searching step, the database is further searched for at least one data file that includes at least one of the search keys extracted in the extracting step.

Claim 9

A computer program to be executed on a computer for searching a database of data files for a desired data file, based on a search condition set by a user, each data file including a plurality of search keys characterizing the data file, the program comprising:

a receiving step of receiving a search condition from the user;

a searching step of searching the database for at least one data file that satisfies the search condition received in the receiving step; and

an extracting step of extracting a plurality of search keys, from the data file that is a search result in the searching step,

wherein in the searching step, the database is further searched for at least one data file that includes at least one of the search keys extracted in the extracting step.

Detailed Description of the Invention

[0001]

Technical Field of the Invention

The present invention relates to a data searching apparatus for use in a patent search system or the like, and particularly relates to a technique for promoting the efficiency of searching operations.

[0002]

Prior Art

Data searching apparatuses for use in patent search systems or the like typically receive the user input of search conditions such as a number and a keyword, and search for data files matching the input number or data files including the input keyword.

Patent data referred to herein intends to include data of various publications and documents relating to patents, utility models, designs, and trademarks, data of foreign publications and publications of decision on trial, and other useful information about intellectual rights such as information about examination procedures.

[0003]

Patent search systems employ a large number of fields as its search conditions. The fields include: data type indicating one of a patent, a utility model, a design, and a trademark; IPC ("International Patent Classification" providing 68,591 classifications according to the seventh edition); FI ("File Index", developed by the Japanese Patent

Office as sub-classifications of the IPC, to be updated at an interval of about one year); F-term ("File Forming Term" providing more than 200,000 technical classifications, particularly developed for mechanical searching); application number; publication (Koukai) number; international application number; international publication number; publication (Kouhyo) number; publication (Koukoku) number; registration number; priority application number; related patent application number; trial number; filing date; publication date; registration date; name of the inventor; name of the applicant; name of each right holder; title of the invention; and keyword.

[0004]

For data searching apparatuses, finding appropriate search conditions is of prime importance. Without appropriate search conditions, the searching for desired data files often ends in failure.

To find a desired data file from a large number of data files, the user first sets a search condition and then searches for the desired file using the set search condition. If failing to find the desired data file, the user sets another search condition based on the search results. In many cases, the user is required to repeat such trial and error searching operations before finally finding the desired data file.

[0005]

As one conventional search system, a search system where search results of the database are recorded for each user so that the search records can later be referred to by each user (see Patent Document 1).

[0006]

Patent Document 1: Japanese Laid-Open Patent Application No. 2000-123021 (abstract, selected drawing).

[0007]

Problems to be Solved by the Invention

However, a first problem lies in that conventional data searching apparatuses lack effective methods for finding appropriate search conditions.

Another problem lies in that all users in the patent search system are not necessarily patent experts who are daily engaged in patent-related operations. Some users in the patent search system may be inexpert users like inventors who only sometimes file patent applications.

[0008]

In the patent search system, effectively searching a huge database of data files to find a desired data file with high accuracy is a difficult task even for expert users. Inexpert users therefore may find it too difficult to even perform the patent database searching.

To be specific, inexpert users may be unfamiliar with such classification symbols as IPC, FI, and F-term employed

in the patent search system. Such inexpert users therefore rarely use these classification symbols but mainly use keywords as their search conditions. With tens to hundreds of thousands of such classification symbols being available, even expert users rarely have knowledge of all the classification symbols. Accordingly, such classification symbols are far from being fully utilized as search conditions.

[0009]

In view of the above problems, the object of the present invention is to provide a data searching apparatus, a data searching method, and a data searching program for aiding users in finding appropriate search conditions and thereby enabling even inexpert users to perform data searching and improving the accuracy of searching as compared with conventional cases.

[0010]

Means to Solve the Problems

The above object of the present invention can be achieved by a data searching apparatus that searches a database of data files for a desired data file, based on a search condition set by a user, each data file including a plurality of search keys characterizing the data file, including: a receiving unit operable to receive a search condition from the user; a searching unit operable to search the database for at least one data file that satisfies the search condition received

by the receiving unit; and an extracting unit operable to extract a plurality of search keys, from the data file that is a search result by the searching unit, wherein the searching unit further searches the database for at least one data file that includes at least one of the search keys extracted by the extracting unit.

[0011]

The above object of the present invention can also be achieved by a data searching method for searching a database of data files for a desired data file, based on a search condition set by a user, each data file including a plurality of search keys characterizing the data file, the method including: a receiving step of receiving a search condition from the user; a searching step of searching the database for at least one data file that satisfies the search condition received in the receiving step; and an extracting step of extracting a plurality of search keys, from the data file that is a search result in the searching step, wherein in the searching step, the database is further searched for at least one data file that includes at least one of the search keys extracted in the extracting step.

[0012]

The above object of the present invention can also be achieved by a computer program to be executed on a computer for searching a database of data files for a desired data

file, based on a search condition set by a user, each data file including a plurality of search keys characterizing the data file, the program including: a receiving step of receiving a search condition from the user; a searching step of searching the database for at least one data file that satisfies the search condition received in the receiving step; and an extracting step of extracting a plurality of search keys, from the data file that is a search result in the searching step, wherein in the searching step, the database is further searched for at least one data file that includes at least one of the search keys extracted in the extracting step.

[0013]

According to these, search keys are extracted from data files that have resulted from searching, and then next searching for data files can be performed using the extracted search keys. In this way, the apparatus can aid the user in finding appropriate search conditions.

Accordingly, even inexpert users can perform data searching and the accuracy of searching can be improved as compared with conventional cases.

[0014]

Further, repeating such operations can refine the search and can improve searchability of desired data. Therefore, the accuracy of searching is improved, and searching for a desired data file becomes easy.

For example, even inexpert users who are unfamiliar with such classification symbols as IPC, FI, and F-term employed in the patent search system can first perform keyword searching and then extract, as search keys, these classification symbols from data files that have resulted from the keyword searching. The inexpert users can then perform next searching for data files based on the extracted classification symbols. Further, expert users can fully utilize the classification symbols because the expert users can use, in searching for data files, even classification symbols that have been unfamiliar to them.

[0015]

Preferred Embodiment

<Overview>

A search system relating to a preferred embodiment of the present invention is described as a patent search system. In this search system, the user can set a search condition and search for patent documents using the set search condition, extract search keys from patent documents that have resulted from the searching, and perform next searching using the extracted search keys. In this system, the user can find an appropriate search condition in a relatively easy manner.

[0016]

<Construction>

FIG. 1 schematically shows a network including the search system relating to the embodiment of the present invention.

The network shown in FIG. 1 includes an external hard disk 1, a Web server 2, an intranet 3, a user computer 4, and a user computer 5.

[0017]

The external hard disk 1 stores various data including data of patent documents.

The Web server 2 is a computer managed by the search service provider. The Web server 2 searches the external hard disk 1 for pieces of patent document data stored therein, based on an instruction relating to search issued by the user computer 4 or the user computer 5, and transmits pieces of patent document data that have resulted from the searching (search results), to the user computer 4 or the user computer 5.

[0018]

The intranet 3 is a local network for connecting limited users, i.e., users within a specific company.

The user computer 4 and the user computer 5 are Web browsers that can be used by the users to directly input and output data.

FIG. 2 shows a detailed construction of the search system relating to the preferred embodiment of the present invention.

[0019]

The search system shown in FIG. 2 includes a patent-document-data storage unit 10, a search-service

providing apparatus 20, a network unit 30, and a user apparatus 40.

The patent-document-data storage unit 10 is such a storage medium as an external hard disk equipped with a non-volatile storage medium. The patent-document-data storage unit 10 stores a database of pieces of patent document data as data files.

Here, each data file of patent document data stored in the patent-document-data storage unit 10 includes a plurality of search keys characterizing the data file. For example, a data file of patent document data may include, as its search keys, the fields: data type indicating one of a patent, a utility model, a design, and a trademark; IPC; FI; F-term; application number; publication (Koukai) number; international application number; international publication number; publication (Kouhyo) number; publication (Koukoku) number; registration number; priority application number; related patent application number; trial number; filing date; publication date; registration date; name of the inventor; name of the applicant; name of each right holder; title of the invention; and keyword.

[0020]

FIG. 3 shows a display example of patent document data stored in the patent-document-data storage unit 10.

The search-service providing apparatus 20 is a Web server

managed by the search service provider. The search-service providing apparatus 20 includes a user authentication unit 21, a window-display instructing unit 22, a patent-document searching unit 23, a search-result-list generating unit 24, a search-key extracting unit 25, and a search-key-list generating unit 26.

[0021]

The network unit 30 is such a network as an intranet, and connects the search-service providing apparatus 20 and the user apparatus 40 to enable communication between the apparatuses.

The user apparatus 40 is a Web browser used by a user to directly input and output data. The user apparatus 40 includes a user ID inputting unit 41, an input-window displaying unit 42, a search-condition inputting unit 43, a search-result-list displaying unit 44, a file selecting unit 45, a search-key-list displaying unit 46, a search-key selecting unit 47, and a search-result outputting unit 48.

[0022]

The user authentication unit 21 receives a user ID from the user ID inputting unit 41, and performs authentication of the user. When the user authentication is successful, the user authentication unit 21 gives permission to activate, to the window-display instructing unit 22. When the user authentication is unsuccessful, the user authentication unit

21 returns a message indicating unsuccessful user authentication to the user ID inputting unit 41.

When receiving the permission from the user authentication unit 21, the window-display instructing unit 22 instructs the input-window displaying unit 42 to display a window for inputting search conditions (hereafter referred to as a "search condition input window").

[0023]

The patent-document searching unit 23 receives data of search conditions, i.e., search queries, from the search-condition inputting unit 43, and searches the patent-document-data storage unit 10 for pieces of patent document data that satisfy the received search conditions. The patent-document searching unit 23 transmits pieces of patent documents that have resulted from the searching, to the search-result-list generating unit 24. Also, the patent-document searching unit 23 receives output target ID information identifying pieces of patent document data to be output, from the file selecting unit 45, and searches for the pieces of patent document data to be output, using the received output target ID information. The patent-document searching unit 23 then transmits the pieces of patent document data to be output, to the search-result outputting unit 48.

[0024]

The search-result-list generating unit 24 generates a

search result list, i.e., a list of pieces of patent document data that have resulted from the searching by the patent-document searching unit 23, and transmits data of the search result list to the search-result-list displaying unit 44.

The search-key extracting unit 25 receives the extraction target ID information from the file selecting unit 45, and extracts search keys from the pieces of patent document data identified by the extraction target ID information. As one example, for one piece of patent document data that is a key extraction target, the search-key extracting unit 25 may extract the most frequently-used five of the search keys for each of the fields IPC, F-term, and Abstract (keyword). [0025]

The search-key-list generating unit 26 generates a list of search keys extracted by the search-key extracting unit 25, and transmits data of the search key list to the search-key-list displaying unit 46. As one example, the search-key-list generating unit 26 generates, for each of the fields IPC, F-term, and Abstract, a list of the frequently-used top five search keys, which are given serial numbers 1 to 5.

The user ID inputting unit 41 receives input of a user ID from the user, and transmits the received user ID to the search-service providing apparatus 20. When receiving a

message indicating unsuccessful user authentication, the user ID inputting unit 41 displays the message to the user.

[0026]

The input-window displaying unit 42 receives an instruction to display a search condition input window from the window-display instructing unit 22, and displays the search condition input window, to urge the user to input search conditions.

FIG. 4 shows a display example where the input-window displaying unit 42 displays the search condition input window on a monitor (not illustrated) of the user apparatus 40.

The search-condition inputting unit 43 receives input of search conditions from the user, and transmits data of the search conditions to the patent-document searching unit 23.

[0027]

As one example, the user refers to the search condition input window 51 shown in FIG. 4, and writes a search query for each of the fields (IPC, F-term, and Abstract in this example) in the search condition input window 51. In this way, the user inputs the search conditions.

The search-result-list displaying unit 44 receives data of the search result list, i.e., the list of pieces of patent document data that have resulted from the searching, from the search-result-list generating unit 24. The

search-result-list displaying unit 44 displays the received list, to urge the user to select pieces of patent document data from the list.

[0028]

FIG. 5 shows a display example where the search-result-list displaying unit 44 displays a search result list window on the monitor of the user apparatus 40.

In FIG. 5, the search result list window 52 is displayed on the monitor where the search condition input window 51 shown in FIG. 4 is displayed. The user can switch the active window using a mouse or the like while referring to both the windows on the same monitor.

[0029]

The file selecting unit 45 receives, from the user, selection of pieces of patent document data to be key extraction targets, and transmits extraction target ID information identifying the selected pieces of patent document data, to the search-key extracting unit 25. The file selecting unit 45 further receives, from the user, selection of pieces of patent document data to be output targets, and transmits output target ID information identifying the selected pieces of patent document data to the patent-document searching unit 23.

[0030]

As one example, the user refers to the search result

list window 52 shown in FIG. 5, and selects a piece of patent document data by marking the corresponding checkbox in the search result list window 52 using a mouse or the like.

The search-key-list displaying unit 46 receives data of the search key list from the search-key-list generating unit 26, and displays the search key list, to urge the user to select search keys from the list.

FIG. 6 shows a display example where the search-key-list displaying unit 46 displays the search key list window on the monitor of the user apparatus 40.

[0031]

In FIG. 6, the search key list window 53 is displayed on the monitor where the search condition input window 51 and the search result list window 52 shown in FIG. 5 are displayed. The user can switch the active window using a mouse or the like while referring to the three windows on the same monitor.

The search-key selecting unit 47 receives, from the user, selection of search keys, and transmits the selected search keys to the search-condition inputting unit 43.

[0032]

As one example, the user refers to the search key list window 53 shown in FIG. 6, and selects search keys each by marking the corresponding checkbox in the search key list window 53.

Here, the search-condition inputting unit 43 transmits new search conditions that include the search keys transmitted from the search-key selecting unit 47, to the patent-document searching unit 23.

As one example, the user clicks the paste button after selecting search keys for each field by marking the corresponding checkbox in the search key list window 53, so that the search-condition inputting unit 43 pastes the selected search keys into the corresponding search condition in the search condition input window 51.

[0033]

The search-result outputting unit 48 receives pieces of patent document data from the patent-document searching unit 23, and outputs the received pieces of patent document data. As one example, the search-result outputting unit 48 displays the pieces of patent document data on the monitor of the user apparatus 40, or prints out the pieces of patent document data.

<Operation>

FIG. 7 shows an operational procedure for patent database searching in the search system relating to the preferred embodiment of the present invention.

[0034]

The following describes the operational procedure for patent database searching with reference to FIG. 7.

(1) In the user apparatus 40, the user ID inputting unit 41 urges the user to input a user ID. Upon receipt of the user ID, the user ID inputting unit 41 transmits the user ID to the search-service providing apparatus 20 (Step S1).

(2) In the search-service providing apparatus 20, the user authentication unit 21 receives the user ID, and performs authentication of the user (step S2).

[0035]

(3) When the user authentication is unsuccessful, the user authentication unit 21 returns a message indicating unsuccessful user authentication to the user apparatus 40, and the user apparatus 40 displays the message to the user (step S3).

(4) When the user authentication is successful, the user authentication unit 21 gives permission to activate, to the window-display instructing unit 22 (step S4).

[0036]

(5) The window-display instructing unit 22 instructs the input-window displaying unit 42 to display the search condition input window (step S5).

(6) In the user apparatus 40, the input-window displaying unit 42 displays the search condition input window, to urge the user to input a search condition (step S6).

(7) The search-condition inputting unit 43 receives, from the user, input of the search condition (step S7).

[0037]

(8) Upon recipe of input of a search condition from the user, the search-condition inputting unit 43 transmits the search condition to the patent-document searching unit 23 (step S8).

(9) In the search-service providing apparatus 20, the patent-document searching unit 23 receives the search condition, and searches for pieces of patent document data that satisfy the received search condition, and transmits pieces of patent document data that have resulted from the searching, to the search-result-list generating unit 24 (step S9).

[0038]

(10) The search-result-list generating unit 24 generates a search result list of the pieces of patent document data that have resulted from the searching by the patent-document searching unit 23, and transmits the search result list to the search-result-list displaying unit 44 (step S10).

(11) In the user apparatus 40, the search-result-list displaying unit 44 receives the search result list and displays the received list, to urge the user to select a piece of patent document data from the list (step S11).

(12) The file selecting unit 45 receives, from the user, selection of a piece of patent document data to be a key

extraction target or selection of a piece of patent document data to be an output target (step S12).

[0039]

(13) When the file selecting unit 45 receives selection of a piece of patent document data to be a key extraction target, the file selecting unit 45 transmits extraction target ID information identifying the selected piece of patent document data, to the search-key extracting unit 25 (step S13).

(14) The search-key extracting unit 25 receives the extraction target ID information, and extracts search keys from the piece of patent document data identified by the extraction target ID information (step S14).

[0040]

(15) The search-key-list generating unit 26 generates a list of the search keys extracted by the search-key extracting unit 25, and transmits the generated search key list to the search-key-list displaying unit 46 (step S15).

(16) In the user apparatus 40, the search-key-list displaying unit 46 receives the search key list and displays the received search key list, to urge the user to select a search key from the list (step S16).

[0041]

(17) The search-key selecting unit 47 receives, from the user, selection of the search key, and transmits the

selected search key to the search-condition inputting unit 43 (step S17).

(18) The search-condition inputting unit 43 transmits a new search condition including the search key transmitted from the search-key selecting unit 47, to the patent-document searching unit 23 (step S18).

(19) When the file selecting unit 45 receives selection of a piece of patent document data to be an output target, the file selecting unit 45 transmits output target ID information identifying the selected piece of patent document data, to the patent-document searching unit 23 (step S19).

[0042]

(20) The patent-document searching unit 23 receives the output target ID information, searches for a piece of patent document data identified by the output target ID information, and transmits the piece of patent document data that has resulted from the searching, to the search-result outputting unit 48 (step S20).

(21) The search-result outputting unit 48 receives the resulting piece of patent document data, and outputs the received piece of patent document data (step S21).

[0043]

According to the embodiment of the present invention described above, pieces of patent document data that have resulted from searching can be used to extract search keys

from them, and then next searching can be performed using the extracted search keys. Therefore, the user can find appropriate search conditions in a relatively easy manner. Although the present invention is described in the above embodiment by taking the patent search system for example, the present invention should not be limited to patent search systems, but may be any other search systems.

[0044]

[0045]

Effects of the Invention

The data searching apparatus of the present invention is a data searching apparatus that searches a database of data files for a desired data file, based on a search condition set by a user, each data file including a plurality of search keys characterizing the data file, including: a receiving unit operable to receive a search condition from the user; a searching unit operable to search the database for at least one data file that satisfies the search condition received by the receiving unit; and an extracting unit operable to extract a plurality of search keys, from the data file that is a search result by the searching unit, wherein the searching unit further searches the database for at least one data file that includes at least one of the search keys extracted by the extracting unit.

[0046]

The data searching method of the present invention is a data searching method for searching a database of data files for a desired data file, based on a search condition set by a user, each data file including a plurality of search keys characterizing the data files, the method including: a receiving step of receiving a search condition from the user; a searching step of searching the database for at least one data file that satisfies the search condition received in the receiving step; and an extracting step of extracting a plurality of search keys, from the data file that is a search result in the searching step, wherein in the searching step, the database is further searched for at least one data file that includes at least one of the search keys extracted in the extracting step.

[0047]

The computer program of the present invention is a computer program to be executed on a computer for searching a database of data files for a desired data file, based on a search condition set by a user, each data file including a plurality of search keys characterizing the data file, the program including: a receiving step of receiving a search condition from the user; a searching step of searching the database for at least one data file that satisfies the search condition received in the receiving step; and an extracting step of extracting a plurality of search keys, from the data

file that is a search result in the searching step, wherein in the searching step, the database is further searched for at least one data file that includes at least one of the search keys extracted in the extracting step.

[0048]

According to these, search keys are extracted from data files that have resulted from searching, and then next searching for data files can be performed using the extracted search keys. In this way, the apparatus can aid the user in finding appropriate search conditions.

Accordingly, even inexpert users can perform data searching and the accuracy of searching can be improved as compared with conventional cases.

[0049]

Further, repeating such operations can refine the search and can improve searchability of desired data. Therefore, the accuracy of searching is improved, and searching for a desired data file becomes easy.

For example, even inexpert users who are unfamiliar with such classification symbols as IPC, FI, and F-term employed in the patent search system can first perform keyword searching and then extract, as search keys, these classification symbols from data files that have resulted from the keyword searching. The inexpert users can then perform next searching for data files based on the extracted classification symbols. Further,

expert users can fully utilize the classification symbols because the expert users can use, in searching for data files, even classification symbols that have been unfamiliar to them.

[0050]

Here, the extracting unit may include: a data-file-list displaying unit operable to display a list of data files that are search results by the searching unit; a file-selection receiving unit operable to receive, from the user, selection of a data file from the list displayed by the data-file-list displaying unit; and a selective extracting unit operable to extract search keys, from the data file selected in the file-selection receiving unit.

[0051]

According to this, the user can extract search keys only from data files selected by the user. Therefore, the user can easily find appropriate search conditions.

Also, input of such data files can be made by a simple user operation of selecting the data files with reference to the list of data files that have resulted from the searching. This represents improved operability and enables easy refining of search. Accordingly, even inexpert users can easily set search conditions.

[0052]

Here, the search keys may be categorized in a plurality of fields, the selective extracting unit may extract search

keys for each of the plurality of fields, from the data file selected in the file-selection receiving unit, and the searching unit may include: a search-key-list displaying unit operable to display a list of the search keys extracted for each of the plurality of fields by the extracting unit; a key-selection receiving unit operable to receive, from the user, selection of at least one search key from the list displayed by the search-key-list displaying unit; and a selective searching unit operable to search the database for at least one data file that includes the search key selected in the key-selection receiving unit.

[0053]

According to this, the apparatus can search for data files including only search keys selected by the user. Therefore, the user can easily find appropriate search conditions.

Also, input of such search keys can be made by a simple user operation of selecting the search keys with reference to the list of the extracted search keys corresponding to the plurality of fields. This represents improved operability and enables easy refining of search. Accordingly, even inexpert users can easily set search conditions.

[0054]

Here, the data searching apparatus may search for a patent data file, and one type of the search keys may be a keyword,

the searching unit may search the database for at least one patent data file that includes a keyword, the extracting unit may extract a plurality of frequently-used keywords, from the patent data file that is a search result by the searching unit, and the searching unit may further search the database for at least one patent data file that includes at least one of the frequently-used keywords extracted by the extracting unit.

[0055]

According to this, the apparatus can search for patent data files including keywords, extract frequently-used keywords from the patent data files that have resulted from the searching, and search for patent data files including some or all of the extracted keywords. Therefore, the apparatus can often use, in searching for desired patent data files, keywords closely related to the desired patent data files.

Also, the data searching apparatus may search for a patent data file, and one type of the search keys may be an IPC symbol, where "IPC" represents the International Patent Classification, the searching unit may search the database for at least one patent data file that includes an IPC symbol, the extracting unit may extract a plurality of IPC symbols, from the patent data file that is a search result by the searching unit, and the searching unit may further search

the database for at least one patent data file that includes at least one of the IPC symbols extracted by the extracting unit.

[0056]

According to this, the apparatus can search for patent data files including IPC symbols, extract IPC symbols from the patent data files that have resulted from the searching, and search for patent data files including some or all of the extracted IPC symbols. Therefore, the apparatus can often use, in searching for desired patent data files, IPC symbols closely related to the desired patent data files.

Also, the data searching apparatus may search for a patent data file, and one type of the search keys may be an F-term, where "F-term" represents the File Forming Term, the searching unit may search the database for at least one patent data file that includes an F-term, the extracting unit may extract a plurality of F-terms, from the patent data file that is a search result by the searching unit, and the searching unit may further search the database for at least one patent data file that includes at least one of the F-terms extracted by the extracting unit.

[0057]

According to this, the apparatus can search for patent data files including F-terms, extract F-terms from the patent data files that have resulted from the searching, and search

for patent data files including some or all of the extracted F-terms. Therefore, the apparatus can often use, in searching for desired patent data files, F-terms closely related to the desired patent data files.

Also, the data searching apparatus may search for a patent data file, and three types of the search keys may be an IPC symbol, an F-term, and a keyword, where "IPC" represents the International Patent Classification, and "F-term" represents the File Forming Term, the receiving unit may receive, as search keys, at least one of IPC symbols, F-terms, and keywords, the searching unit may search the database for at least one patent data file that includes at least one of the search keys received by the receiving unit, the extracting unit may extract, as search keys, IPC symbols, F-terms, and frequently-used keywords, from the patent data file that is a search result by the searching unit, and the searching unit may further search the database for at least one patent data file that includes at least one of the search keys extracted by the extracting unit.

[0058]

According to this, the apparatus can search for patent data files including IPC symbols, F-terms, and keywords, extract IPC symbols, F-terms, and frequently-used keywords, from the patent data files that have resulted from the searching, and search for patent data files including some or all of

the extracted IPC symbols, F-terms, and frequently-used keywords. Therefore, the apparatus can often use, in searching for desired patent data files, IPC symbols, F-terms, and keywords, closely related to the desired patent data files.

Brief Description of the Drawings

FIG. 1

FIG. 1 schematically shows a network including a search system relating to a preferred embodiment of the present invention.

FIG. 2

FIG. 2 shows a detailed construction of the search system relating to the embodiment of the present invention.

FIG. 3

FIG. 4 shows a display example of patent document data stored in the patent-document-data storage unit 10.

FIG. 4

FIG. 4 shows a display example where an input-window displaying unit 42 displays a search condition input window on a monitor (not shown) of a user apparatus 40.

FIG. 5

FIG. 5 shows a display example where a search-result-list displaying unit 44 displays a search result list window on the monitor of the user apparatus 40.

FIG. 6

FIG. 6 shows a display example where a search-key-list displaying unit 46 displays a search key list window on the monitor of the user apparatus 40.

FIG. 7

FIG. 7 shows an operational procedure for patent database searching in the search system relating to the embodiment of the present invention.

Explanation of Referenced Numerals

1 external hard disk
2 Web server
3 intranet
4 user computer
5 user computer
10 patent-document-data storage unit
20 search-service providing apparatus
21 user authentication unit
22 window-display instructing unit
23 patent-document searching unit
24 search-result-list generating unit
25 search-key extracting unit
26 search-key-list generating unit
30 network unit
40 user apparatus
41 user ID inputting unit

42 input-window displaying unit

43 search-condition inputting unit

44 search-result-list displaying unit

45 file selecting unit

46 search-key-list displaying unit

47 search-key selecting unit

48 search-result outputting unit

Document Name Abstract

Abstract

Subject

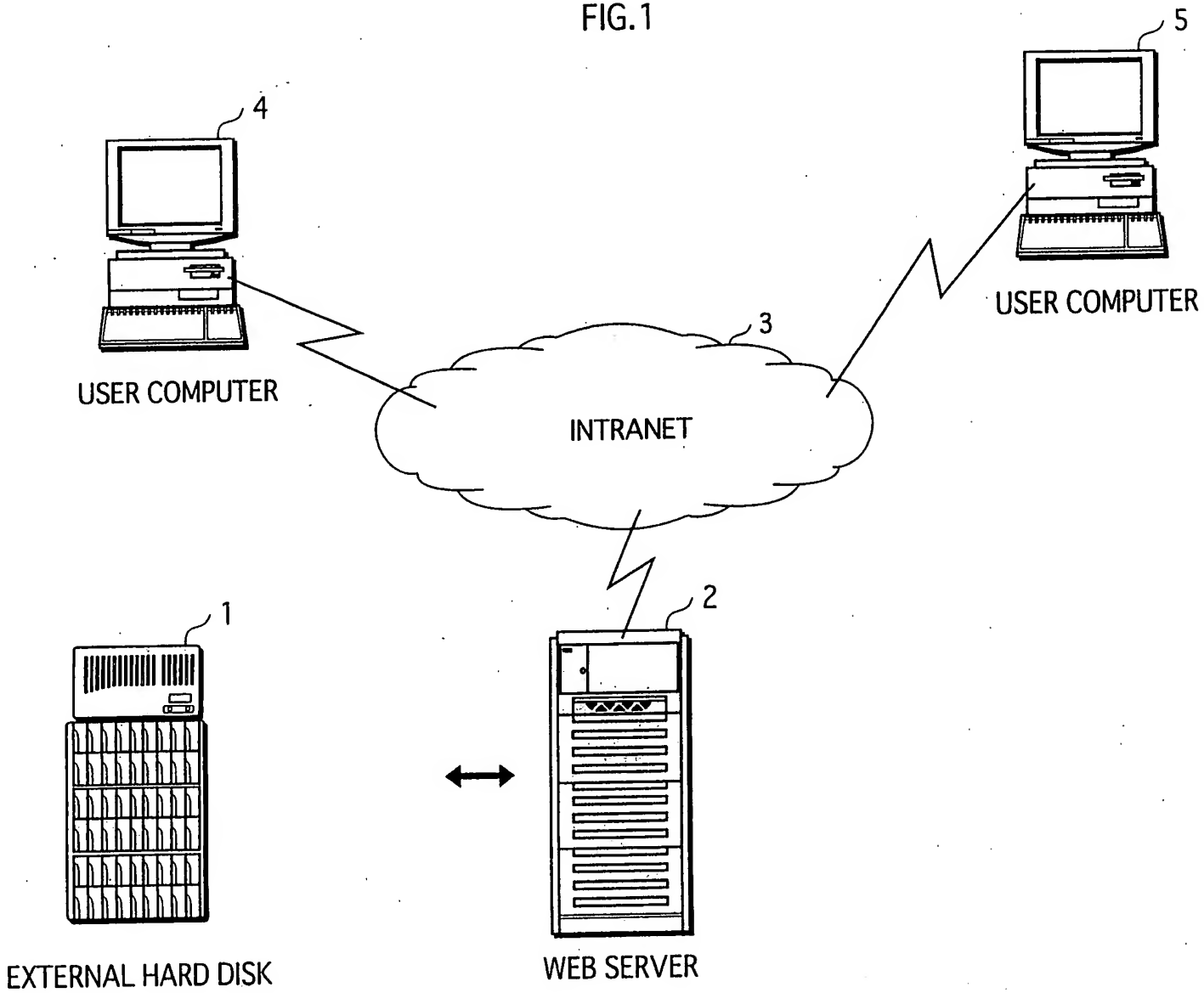
To provide a data searching apparatus for aiding users in finding appropriate search conditions and thereby enabling even inexpert users to perform data searching and improving the accuracy of searching as compared with conventional cases.

Means to Achieve the Subject

A data searching apparatus searches a database of data files for a desired data file, based on a search condition set by a user. Each data file includes a plurality of search keys characterizing the data file. The data searching apparatus includes a patent-document searching unit 23 that receives a search condition and searches the database for a data file that satisfies the search condition, and a search-key extracting unit 25 that extracts a plurality of search keys from the data file resulting from the searching. The patent-document searching unit 23 further searches the database for a data file that includes at least one of the search keys extracted by the search-key extracting unit 25.

Selected Figure FIG. 2

FIG.1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5
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USER COMPUTER
3
INTRANET
1
2
EXTERNAL HARD DISK
WEB SERVER

FIG. 2

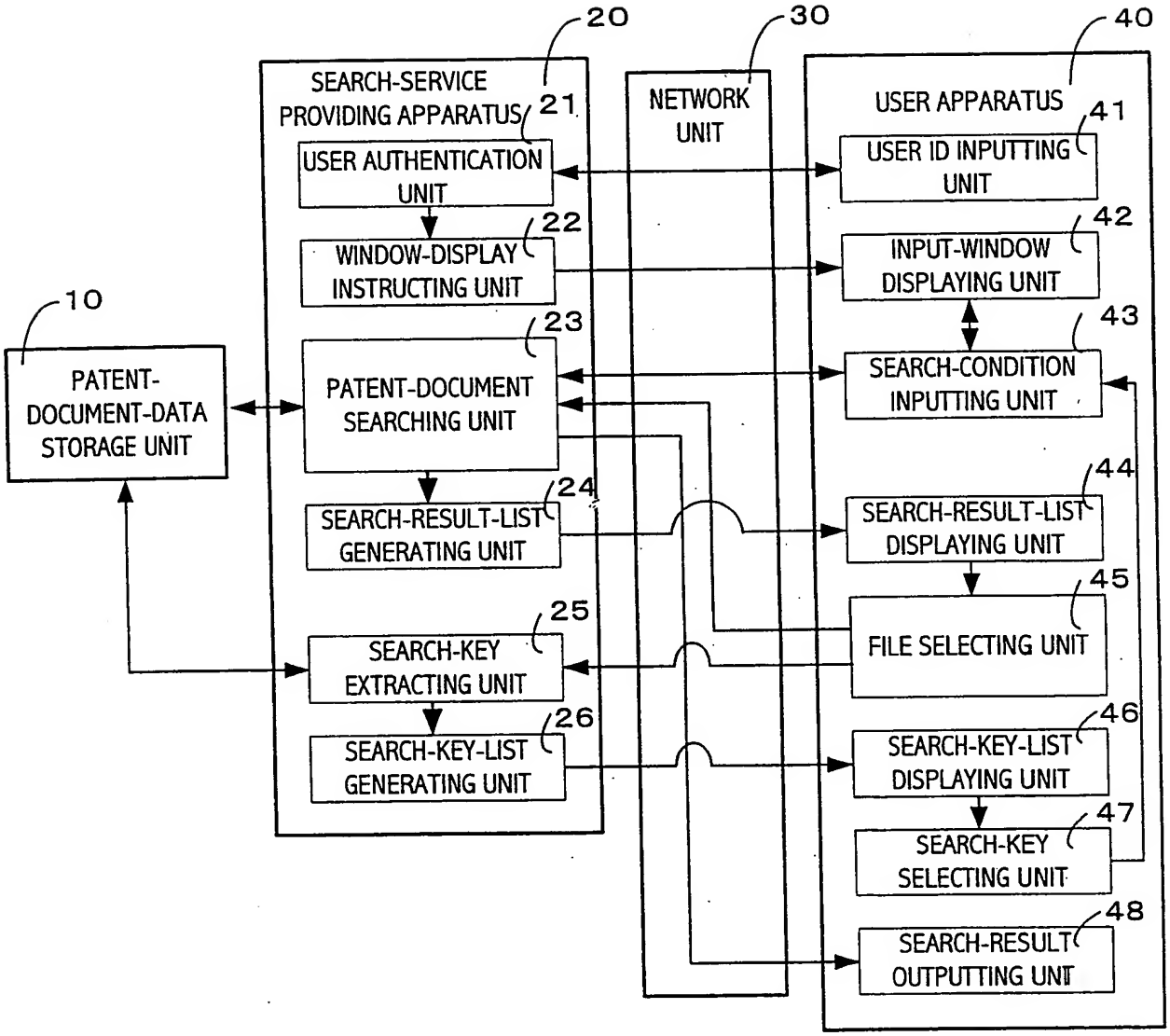
10
PATENT-DOCUMENT-DATA STORAGE UNIT
20
SEARCH-SERVICE PROVIDING APPARATUS
21
USER AUTHENTICATION UNIT
22
WINDOW-DISPLAY INSTRUCTING UNIT
23
PATENT-DOCUMENT SEARCHING UNIT
24
SEARCH-RESULT-LIST GENERATING UNIT
25
SEARCH-KEY EXTRACTING UNIT
26
SEARCH-KEY-LIST GENERATING UNIT
30
NETWORK UNIT
40
USER APPARATUS
41
USER ID INPUTTING UNIT
42
INPUT-WINDOW DISPLAYING UNIT
43
SEARCH-CONDITION INPUTTING UNIT
44
SEARCH-RESULT-LIST DISPLAYING UNIT
45
FILE SELECTING UNIT
46
SEARCH-KEY-LIST DISPLAYING UNIT
47
SEARCH-KEY SELECTING UNIT
48
SEARCH-RESULT OUTPUTTING UNIT

FIG. 3

Front Page/ Patent Search System

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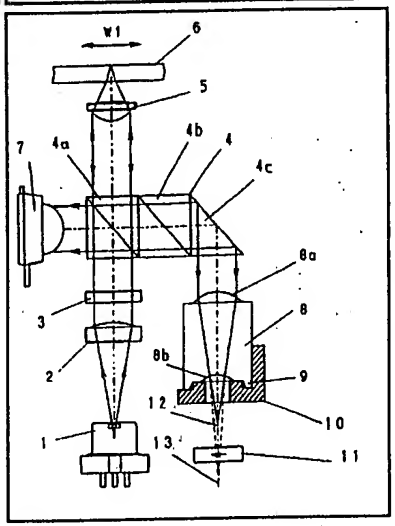
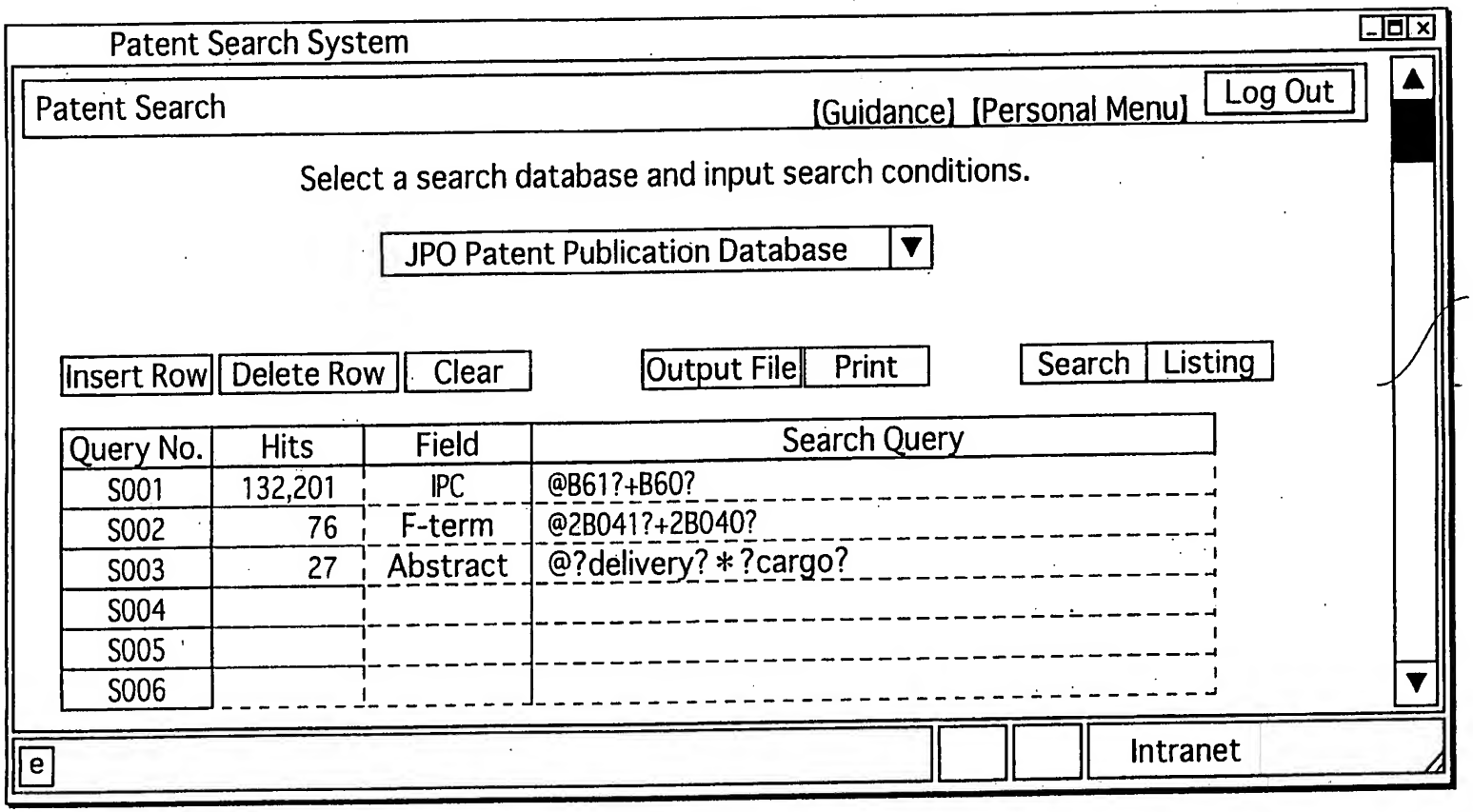
No	Checkbox	Bibliography	Selected Figure	Keyword of Frequent Use
1	☐	(21)[Application Number] H8-157097 (22)[Filing Date] June 18, 1996 (11)[Publication Number] H10-3683 (43)[Publication Date] January 6, 1998 (54)[Title of the Invention] Optical Head, and Optical Element and Holding Member for the Same (57)[Abstract] [Object] To provide optical elements and holding members suitable for optical heads... [Means of Achieving the Object] As optical element 8 that functions as a detection lens, a substantially cylindrical lens having convex lens surface 8a and concave cylindrical lens surface 8b... (71)[Applicant] Matsushita Electric Industrial Co., Ltd. (72)[Inventor] Nakata Hideki (72)[Inventor] Aikou Hideki (51)[Examination Request] Not Requested G11B 7/12 7/135 [Examination Request] Not Requested		optical element fit portion lens surface holding member astigmatic optical head information recording medium luminous flux main beam optical axis

FIG. 4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IPC
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S002
76
F-term
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S003
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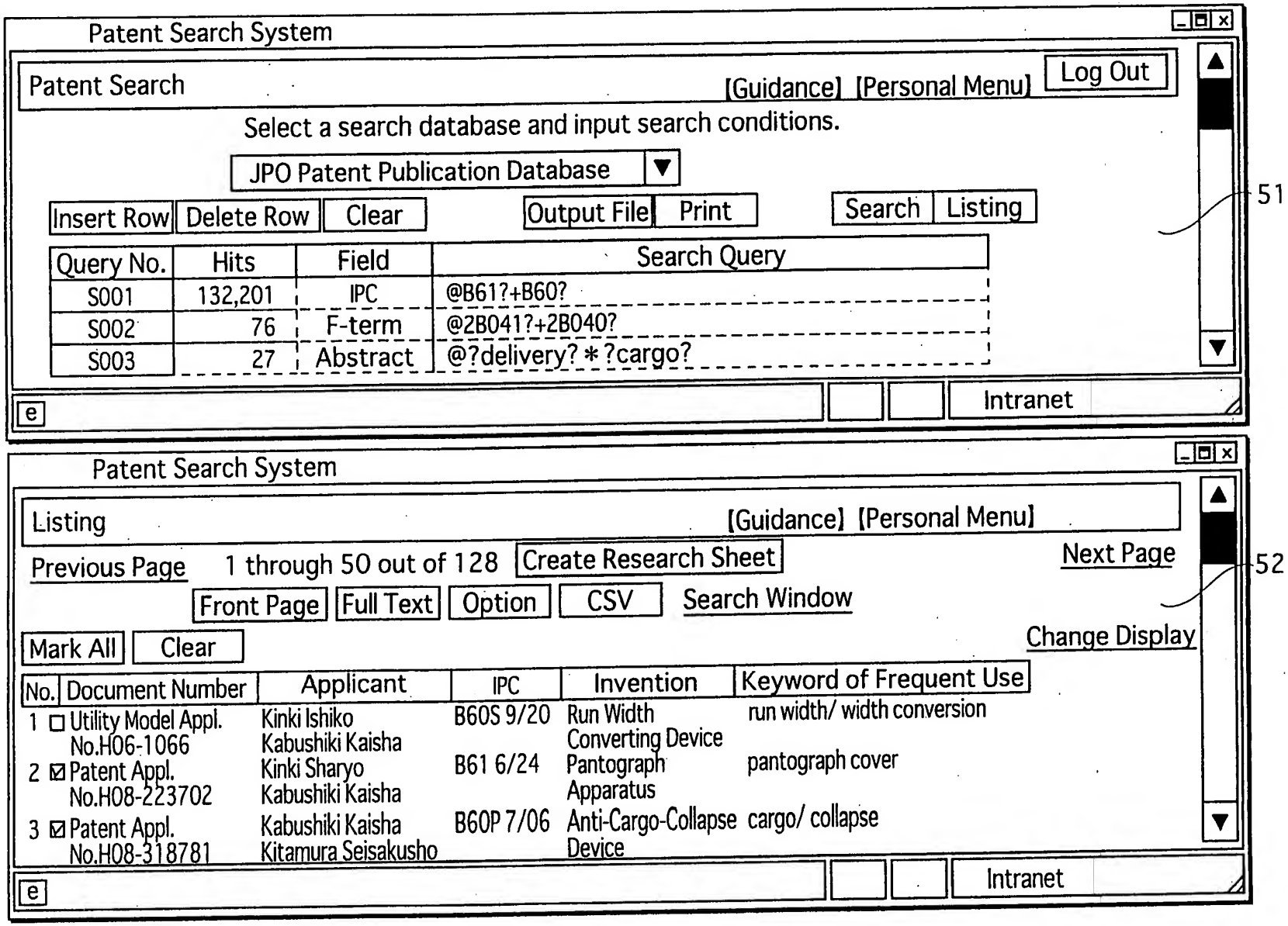
S004
S005
S006
e
Intranet

FIG. 5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S002 | 76 | F-term | @2B041?+2B040?
S003 | 27 | Abstract | @?delivery? * ?cargo?
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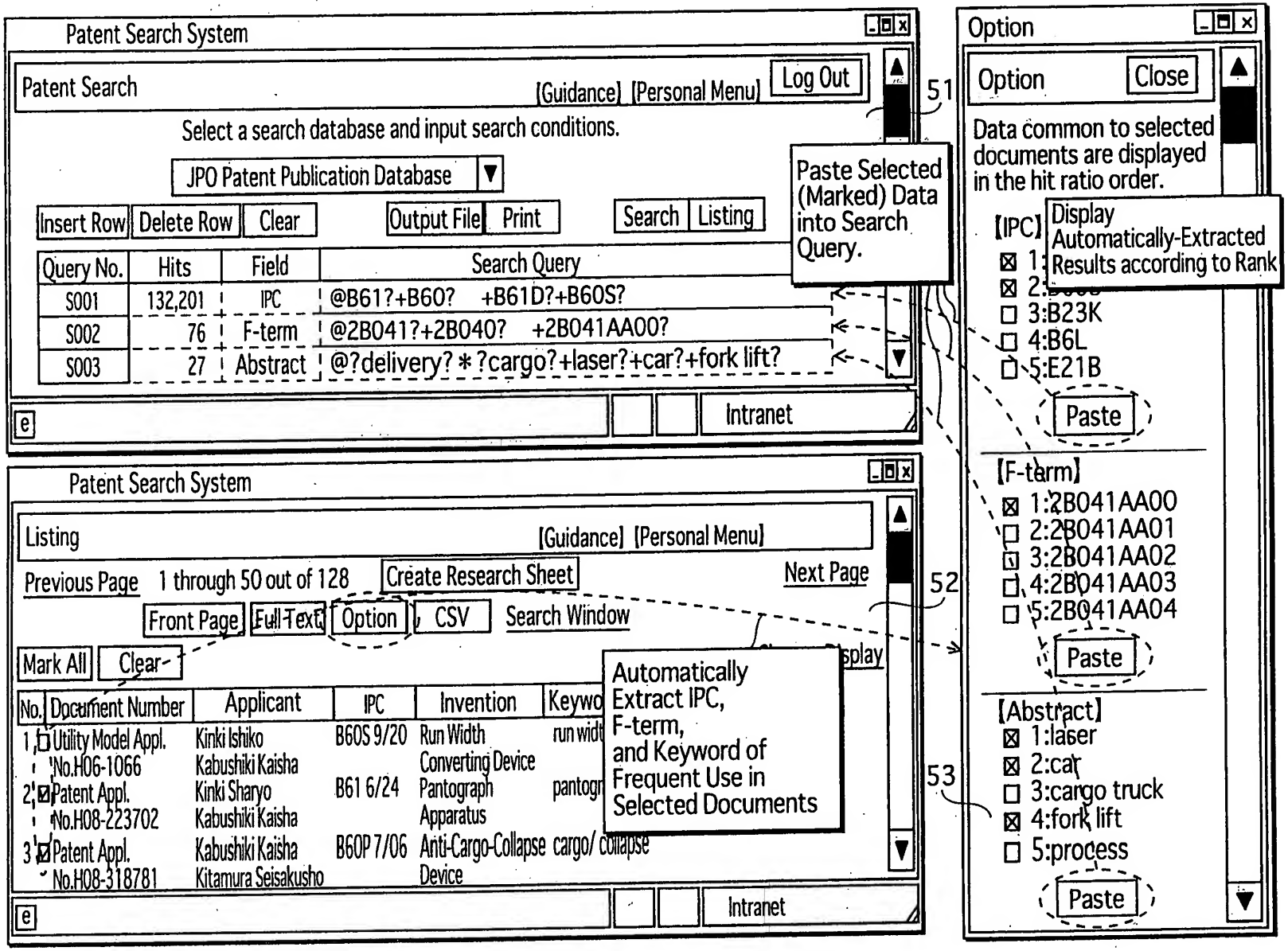
Next Page
52
Front Page
Full Text
Option
CSV
Search Window
Change Display
Mark All
Clear
No. | Document Number | Applicant | IPC | Invention | Keyword of Frequent Use
1 Utility Model Appl. No.H06-1066 | Kinki Ishiko Kabushiki Kaisha | B60S 9/20 | Run Width Converting Device | run width/ width conversion
2 Patent Appl. No.H08-223702 | Kinki Sharyo Kabushiki Kaisha | B61 6/24 | Pantograph Apparatus | pantograph cover
3 Patent Appl. No.H08-318781 | Kabushiki Kaisha Kitamura Seisakusho | B60P 7/06 | Anti-Cargo-Collapse Device | cargo/ collapse
Intranet

FIG. 6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JPO Patent Publication Database
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Search
Listing
Query No.
Hits
Field
Search Query
S001
132,201
IPC
@B61?+B60? +B61D?+B60S?
S002
76
F-term
@2B041?+2B040? +2B041AA00?
S003
27
Abstract
@?delivery?*?cargo?+laser?+car?+fork lift?
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2:car
3:cargo truck
4:fork lift
5:process
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52
Front Page
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CSV
Search Window
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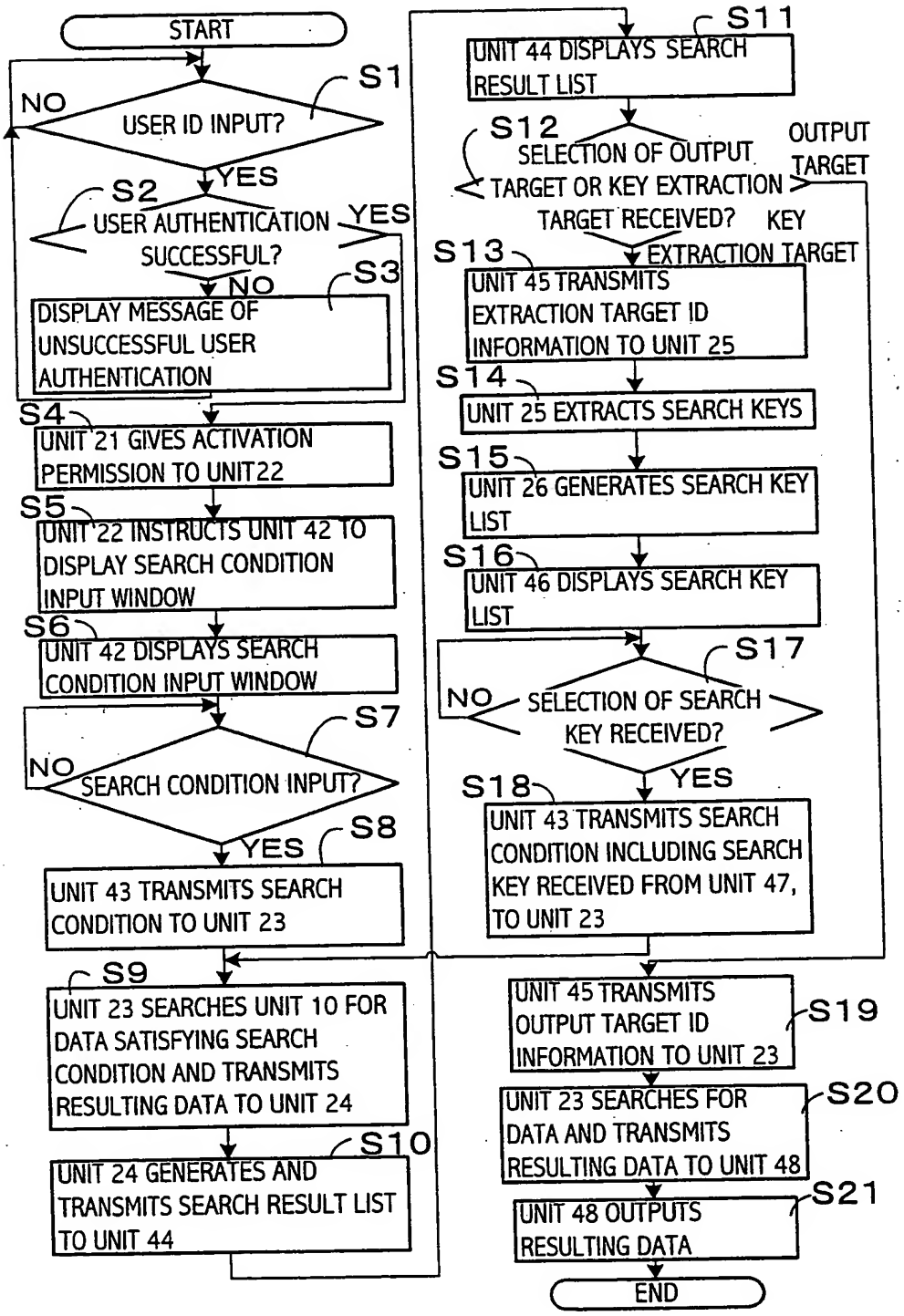
Automatically Extract IPC, F-term, and Keyword of Frequent Use in Selected Documents
No.
Document Number
Applicant
IPC
Invention
1
Utility Model Appl. No.H06-1066
Kinki Ishiko Kabushiki Kaisha
B60S 9/20
Run Width Converting Device
2
Patent Appl. No.H08-223702
Kinki Sharyo Kabushiki Kaisha
B61 6/24
Pantograph Apparatus
pantogr
3
Patent Appl. No.H08-318781
Kabushiki Kaisha Kitamura Seisakusho
B60P 7/06
Anti-Cargo-Collapse Device
cargo/ collapse
53
Intranet

FIG. 7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USER ID INPUT?
NO
YES
S2
USER AUTHENTICATION SUCCESSFUL?
YES
NO
S3
DISPLAY MESSAGE OF UNSUCCESSFUL USER AUTHENTICATION
S4
UNIT 21 GIVES ACTIVATION PERMISSION TO UNIT22
S5
UNIT 22 INSTRUCTS UNIT 42 TO DISPLAY SEARCH CONDITION INPUT WINDOW
S6
UNIT 42 DISPLAYS SEARCH CONDITION INPUT WINDOW
S7
NO
SEARCH CONDITION INPUT?
YES
S8
UNIT 43 TRANSMITS SEARCH CONDITION TO UNIT 23
S9
UNIT 23 SEARCHES UNIT 10 FOR DATA SATISFYING SEARCH CONDITION AND TRANSMITS RESULTING DATA TO UNIT 24
S10
UNIT 24 GENERATES AND TRANSMITS SEARCH RESULT LIST TO UNIT 44
S11
UNIT 44 DISPLAYS SEARCH RESULT LIST
S12
SELECTION OF OUTPUT TARGET OR KEY EXTRACTION TARGET RECEIVED?
OUTPUT TARGET
KEY EXTRACTION TARGET
S13
UNIT 45 TRANSMITS EXTRACTION TARGET ID INFORMATION TO UNIT 25
S14
UNIT 25 EXTRACTS SEARCH KEYS
S15
UNIT 26 GENERATES SEARCH KEY LIST
S16
UNIT 46 DISPLAYS SEARCH KEY LIST
S17
NO
SELECTION OF SEARCH KEY RECEIVED?
YES
S18
UNIT 43 TRANSMITS SEARCH CONDITION INCLUDING SEARCH KEY RECEIVED FROM UNIT 47, TO UNIT 23
UNIT 45 TRANSMITS OUTPUT TARGET ID INFORMATION TO UNIT 23
S19
UNIT 23 SEARCHES FOR DATA AND TRANSMITS RESULTING DATA TO UNIT 48
S20
UNIT 48 OUTPUTS RESULTING DATA
S21
END